

**TECHNICAL SUPPORT DOCUMENT
NOTICE OF CONSTRUCTION ACCESS BUSINESS GROUP, LLC
NUTRILITE - QUINCY
QUINCY, WASHINGTON
APRIL 2014**

On December 26, 2013, Nutrilite submitted a third NOC application for the Quincy Facility. The December submittal was to address a design change to process a portion of the facility extract through a refractance window dryer (RWD). The application was completed on March 13, 2014 and included use of the existing fabric filter for dry material exhaust control and a Natural Gas-Fired boiler to be transferred from the Nutrilite facility in Southern California to Quincy. The 8.35 mmBTU/hr boiler satisfies BACT emissions at the same NO_x and CO concentrations as the 2 Superior boilers permitted in 2013 for this facility. The Nutrilite facility is not yet completely constructed, so this addition was evaluated as a single new source review project with the earlier two applications. The following table provides emission estimates for the entire project, including the previous two approvals:

ID	Source Name	NO_x (tpy)	SO₂ (tpy)	PM₁₀ (tpy)	PM_{2.5} (tpy)	CO (tpy)	VOC (tpy)
1-2	Greenfield Facility Boilers	1.24	0.04	0.03	0.03	3.03	0.33
3-9	Greenfield Facility (without boilers)	0.29	0.0018	1.49	1.49	0.28	12.55
10	Semi Works Process			--		--	0.07
11	Emergency Fire Pump	0.0098	--	0.0003	0.0003	0.0035	0.0004
12	New NG Boiler	0.62	0.02	0.02	0.02	1.27	0.20
13	New RWD			--		--	1.10
Totals		2.17	0.06	1.54	1.53	4.57	14.24
<i>Exemption Levels</i>		<i>2.0</i>	<i>2.0</i>	<i>0.75</i>	<i>0.5</i>	<i>5.0</i>	<i>2.0</i>

TSD for Application Completed November 20, 2013

On August 30, 2013, Access Business Group (Nutrilite-Quincy or Nutrilite) applied to Ecology to add equipment to its facility approved by Ecology on April 1, 2013. Process equipment to be added includes a 'semi-works' system to extract and concentrate herbal extracts of lesser value, installation of a 4,000 gallon feed tank between the previously approved extract holding tanks and evaporators (a 'rototherm' feed tank) in the approved extraction/concentration line and, for facility safety, a diesel-powered fire-suppression water pump. All process equipment is to be routed to existing pollution control equipment, so this proposed addition to the facility will be reflected in a negligible emission increase. The diesel fire pump will be limited to 29 hours of testing per year to avoid exceeding the SQER for diesel particulate and triggering modeling. All equipment will be added to the existing approval order which is to be reissued under a new order number.

The August 30, 2013 application to add the above-described equipment to the Quincy approval order was determined to be incomplete without an air balance showing the catalytic oxidizer has excess capacity to control the new equipment, and Nutrilite's agreement to requirements for the

fire pump diesel engine. These were received on November 20, 2013, completing this application.

APRIL 2013 (First Approval)

1. EXECUTIVE SUMMARY

The Washington State Department of Ecology (Ecology) has determined that the applicant, Nutrilite, has satisfied all of the requirements of New Source Review for its 2012 proposed herbal extraction facility near Quincy, WA. An air quality analysis was performed to demonstrate that the operation of this facility to extract valuable herbal components from up to 2450 tons per year of plant material will not cause or contribute to a violation of any state or federal ambient air quality standard. Ecology now finds that the project will have no significant adverse impact on air quality. The following outlines Ecology's technical analysis of this proposed facility.

2. INTRODUCTION

2.1. The Project

On November 8, 2012, Access Business Group, LLC dba Nutrilite proposed to develop a new herbal extract production facility on a property near Quincy, WA. The proposal includes construction and operation of a receiving building for dried, bagged plant material, denatured ethanol extraction process equipment, ethanol recovery equipment, product evaporation and drying equipment, and shipping for both dried product and spent plant material. The proposal includes combustion devices: 2-7mmBTU/hr boilers (equipped with ultra-low NOx burners), and a 0.68 mmBTU gas-fired process heater for the spray dryer with a Maxon NPLE low-NOx burner.

2.1.1.1. The Nutrilite facility is proposed at a location near the town of Quincy, WA, on the Northwest Corner of the intersection of Port Industrial Way and 13th Ave NW (Road R) in the City of Quincy, WA. A legal description of this location is the North 1/8 of the South East ¼ of Section 12, Township 20 North, Range 24 East, Willamette Meridian, or Lot 1 of Port District Industrial Park No. 6 BSP. This is a 12 acre parcel adjacent to Road R in the City of Quincy.

2.1.1.2. During operation of the facility, there will be emissions from the receiving of plant material to be extracted, from receiving and storage of fresh ethanol and recovery and storage of recovered ethanol, ethanol from plumbing connector leaks and from vacuum pumps, evaporators, and the spray dryer. There will be some ethanol (minor) and particulate matter released by the spray dryer wet scrubber. There will be combustion emissions from the boilers and spray dryer heater. There may be particulate matter released by the shipping activities associated with spent (extracted) plant material and dried product although these are described as insignificant.

2.1.1.3. This is a new source so there have been no Air Quality Program enforcement actions taken against this facility.

3. Applicable Regulations

3.1. WAC 173-400-113, Requirements for new sources in attainment or unclassifiable areas, is the State regulation that defines the evaluations of the Nutrilite Quincy project(s). The subsections of WAC 173-400-113 require the following:

3.1.1. WAC 173-400-113(1): "The proposed new source will comply with all applicable new source performance standards (NSPS), national emission standards for hazardous air pollutants (NESHAP)...". Nutrilite's projects were reviewed for applicability of the following standards under this subsection of the WAC:

3.1.1.1. The small boiler NSPS (at 40 CFR 60, Subpart Dc) applies to boilers greater than 10 mmBTU per hour. Nutrilite's boilers at 7 mmBTU/hr are smaller than the threshold that would trigger this NSPS.

Ecology is not aware of any other NSPS or NESHAP that apply to the Nutrilite operations.

3.1.2. WAC 173-400-113(2): "The proposed new source or modification will employ BACT for all pollutants not previously emitted or whose emissions would increase as a result of the new source or modification". **Note that Ecology disagrees with Nutrilite's application conclusion that NSR (including BACT) does not apply to this facility for NOx: The potential to emit NOx for two uncontrolled 7 mmBTU/hr boilers is 12,023 lb/yr or 6 tons per year, well in excess of the 2 ton per year threshold for NSR in WAC 173-400-110(5).** Nutrilite is required to employ BACT in the terms and conditions of the Approval Order associated with this Technical Support Document. Presumptive BACT levels, generalized for the types of exhaust streams at the Nutrilite facility are as follows:

3.1.2.1. Exhaust Streams with dry aerosols: Fabric filtration to reduce the exhaust concentration to 0.005 gr/dscf or less.

3.1.2.2. Natural gas fired equipment: exhaust concentrations of NOx of 9 ppmv or less, of CO of 50 ppmv or less.

3.1.3. Specific BACT

3.1.3.1. PM:

3.1.3.1.1. Following construction activities, PM generated by receiving will be controlled by fabric filters integral to the initial pneumatic conveyors to the extractor charging stations. The 2 50 cfm filters will be vented inside the structures on-site. Dry material in the vents off extractors 1&2, the spray dryer mix tank, 3 spray dryer weigh-up stations, and the spray dryer fill room will be vented to a 7200 cfm fabric filter required to emit no more than BACT levels of particulate matter (0.005 grains per dry standard cubic foot), which results in a BACT emission level of 0.304 lb/hr and 1.3 tons per year.

3.1.3.1.2. PM generated by the spray dryer will be controlled with a material recovery cyclone, followed by the spray dryer wet scrubber. No design details have been provided for any of the pollution control equipment proposed for this project, instead Nutrilite's consultant has stated that the scrubber will emit no more than 0.005 grains particulate matter per dry

standard cubic foot, which results in a BACT emission level of 0.12 lb/hr or 0.53 tons per year. Ecology agrees that this is a BACT-level concentration, but cautions that it is remarkable performance for wet scrubbing equipment.

3.1.3.2. NO_x:

3.1.3.2.1. BACT for NO_x for the spray dryer process heater is proposed as the emission level generated by a Maxon NPLE low NO_x burner. Ecology agrees. BACT for NO_x for the boilers is a concentration of 9 ppmv at 3 percent O₂. This represents an BACT emission level of 0.143 lb/hr per boiler or 0.63 ton per year each boiler. Ecology agrees that these are BACT-level emission rates for the equipment proposed.

3.1.3.3. CO:

3.1.3.3.1. Carbon Monoxide is emitted by the facility combustion devices. Both the Maxon burner in the spray dryer heater and the ultra-low NO_x boiler burners represent optimal CO performance for burners designed for low NO_x emission rates. The Maxon NPLE burner emissions of CO have been characterized using AP-42 emission factors, which Ecology accepts. The boiler burner CO production was estimated and modeled also using AP-42 emission factors. Ecology did not accept this, and the application was amended to include the customary CO guarantee associated with the ultra-low NO_x burners. Ecology determines that the emission levels proposed reflect the implementation of BACT.

3.1.3.4. VOC:

3.1.3.4.1. All equipment at this facility with significant emission potential for VOC is to be vented into a catalytic oxidizer with a minimum control efficiency of 98%. The exhaust from the oxidizer will emit a maximum of 0.42 lb/hr and 172 ppmv of ethanol at this control efficiency. Ecology has determined that this value represents BACT for the equipment ducted to the oxidizer. Additional features of Ecology's VOC BACT determination include a leak detection and repair program for the plumbing in ethanol service and vapor-balance type vapor recovery for the receipt of fresh ethanol.

3.1.4. WAC 173-400-113(3): "Allowable emissions from the proposed new source or modification will not delay the attainment date for an area not in attainment, nor cause or contribute to a violation of any air quality standard." Nutrilite's emission estimates have been used as inputs for AERMOD ambient air quality modeling for the facility at its proposed maximum operating or emission rates. The modeling likely overestimates the impacts of the facility, but still indicates compliance with this subsection of the regulation. Note that due to the misinterpretation noted in Section 3.1.2 above, modeling results were not reported for the facility emissions of NO_x. The application, however, shows that emissions of NO_x with controls representing BACT-level emissions, drop the facility total NO_x below the WAC 173-400-110(5) emission totals requiring modeling. This indicates that, for NO_x, the facility will not cause or contribute to an exceedance of a national ambient air quality standard.

3.1.5. WAC 173-400-113(5): “If the proposed new source or the proposed modification will emit any toxic air pollutants regulated under chapter 173-460 WAC, the source meets all applicable requirements of that program.” Nutrilite’s combustion equipment emits only 4 TAPs above the de minimus levels in WAC 173-460: benzene, formaldehyde, acrolein, and carbon monoxide. All these pollutants were below the emission rates triggering dispersion modeling in WAC 173-460 (SQER), but over the level (de minimus) requiring t-BACT. These pollutants all are reduced the more complete the combustion process is. The boiler burners and the spray dryer burner are state of the art equipment reflecting optimal combustion efficiency. The limitations on facility operations that result from these emissions through WAC 173-460 are addressed in the section on toxics, below.

3.2. WAC 173-460, Controls for New Sources of Toxic Air Pollutants, is the State regulation that addresses the risk to the public from routine releases of toxic air contaminants from new and modified sources. Nutrilite’s operations emit four known pollutants that are listed in WAC 173-460 as toxic air pollutants: benzene, formaldehyde, acrolein, and carbon monoxide.

3.2.1. WAC 173-460-050: The applicant must quantify the facility’s emissions of toxic air contaminants. Nutrilite has done this in its application. The critical toxics emission points (those with emissions higher than the WAC 173-460 de minimus) are boilers and the spray dryer heater.

3.2.1.1. WAC 173-460-060: The applicant must install and operate t-BACT on each emission point for which there is an increase in a toxic air pollutant. The Approval Order based on the analyses described in this technical support document contains limitations that reflect t-BACT for each emission point or activity where toxics have been identified as being released.

3.2.2. WAC 173-460-070: This section of the regulation requires that impacts of emissions of toxic air pollutants be demonstrated to be sufficiently low to protect human health and safety. This is satisfied if none of the TAPs identified and quantified are emitted at rates greater than the WAC 173-460 Small Quantity Emission Rates (SQER) as is the case at this facility.

4. The NOC Application:

The Nutrilite Facility NOC application was first received on September 10, 2012. The September application was withdrawn and resubmitted with corrections on November 2, 2012. On December 6, Ecology communicated to Nutrilite that more information was required and that the project would be a ‘complex’ NOC order. Nutrilite paid the additional \$8,500 and submitted additional information requested by Ecology on January 22, 2013.

5. Ambient Air Quality Analysis

5.1. Modeling Methodology

Nutrilite's consultant used the EPA-approved Aermid dispersion model to determine PM and CO impacts of the project. The modeling techniques used are acceptable to Ecology.

5.2. NAAQS Analysis

Dispersion of the emissions of the criteria pollutants from the Nutrilite facility was modeled using Aermid. The modeling indicates that with the controls proposed for the facility, it should operate without exceeding the NAAQS. The project, then, will comply with the NAAQS and State Standards.

5.3. WAC 173-460, Toxic Air Pollutant Modeling Results

For emissions of toxic air pollutants listed in WAC 173-460, if the emission point or activity has t-BACT control, the emissions impacts of that pollutant after control may be approved if they are demonstrated to be less than the acceptable source impact levels (ASILs) in WAC 173-460. There were no pollutants whose emissions were determined to be greater than small quantity emission rates (SQER) thus no impact modeling of TAPs is required for the project.